Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

IN THE CLAIMS:

1. (Original): A novel transition metal compound represented by the following general formula (1):

$(C_5R^1R^2R^3R^4R^5)(C_5R^6R^7R^8R^9R^{10})(C_5R^{11}R^{12}R^{13}R^{14}R^{15})M^1H$ ---Formula(1),

wherein $C_5R^1R^2R^3R^4R^5$, $C_5R^6R^7R^8R^9R^{10}$ and $C_5R^{11}R^{12}R^{13}R^{14}R^{15}$ denote cyclopentadienyl groups or substituted cyclopentadienyl groups, respectively;

R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14} and R^{15} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups each having a substituent of hydrocarbon having 1 to 30 carbon atoms, which are the same or different from one another;

among them, R^1, R^2, R^3, R^4, R^5, or R^6, R^7, R^8, R^9, R^{10}, or R^{11}, R^{12}, R^{13}, R^{14}, R^{15} can be bonded to one another forming a cyclic hydrocarbon group (including polycyclic structure);

provided that at least one of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14} and R^{15} is a substituent group other than hydrogen atom; and

M^1 denotes a transition metal of group 4 of the periodic table.

2. (Original): The transition metal compound represented by the following general formula (2) as claimed in Claim 1:

$(C_5R^{16}R^{17}R^{18}R^{19}R^{20})(C_5R^{21}R^{22}R^{23}R^{24}R^{25})(C_5H_2R^{26}R^{27}R^{28})M^2H$ ---Formula (2),

wherein $C_5R^{16}R^{17}R^{18}R^{19}R^{20}$, $C_5R^{21}R^{22}R^{23}R^{24}R^{25}$ and $C_5H_2R^{26}R^{27}R^{28}$ denote cyclopentadienyl groups or substituted cyclopentadienyl groups, respectively;

$R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23}, R^{24}, R^{25}, R^{26}, R^{27}$ and R^{28} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups each having a substituent of hydrocarbon having 1 to 30 carbon atoms, which are the same or different from one another;

among them, $R^{16}, R^{17}, R^{18}, R^{19}, R^{20}$, or $R^{21}, R^{22}, R^{23}, R^{24}, R^{25}$, or R^{26}, R^{27}, R^{28} can be bonded to one another forming a cyclic hydrocarbon group (including polycyclic structure);

Provided that at least one of $R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23}, R^{24}, R^{25}, R^{26}, R^{27}$, and R^{28} is a substituent group other than hydrogen atom: and

M^2 denotes a transition metal of group 4 of the periodic table.

3. (Original): The transition metal compound as claimed in Claim 2, wherein R^{26}, R^{27} and R^{28} are bonded to adjacent carbons at the 1-position, 2-position and 3-position.

4. (Original): The transition metal compound represented by the following general formula (3) as claimed in Claim 1:

$(C_5H_2R^{29}R^{30}R^{31})(C_5H_2R^{32}R^{33}R^{34})(C_5H_2R^{35}R^{36}R^{37})M^3H$ ---Formula (3),

wherein $(C_5H_2R^{29}R^{30}R^{31})$, $(C_5H_2R^{32}R^{33}R^{34})$ and $(C_5H_2R^{35}R^{36}R^{37})$ denote cyclopentadienyl groups or substituted cyclopentadienyl groups, respectively;

$R^{29}, R^{30}, R^{31}, R^{32}, R^{33}, R^{34}, R^{35}, R^{36}$ and R^{37} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups having

a substituent of hydrocarbon having 1 to 30 carbon atoms, which are the same or different from one another,

among them, R^{29}, R^{30}, R^{31}, or R^{32}, R^{33}, R^{34}, or R^{35}, R^{36}, R^{37} can be bonded to one another forming a cyclic hydrocarbon group (including polycyclic structure); provided that at least one of R^{29}, R^{30}, R^{31}, R^{32}, R^{33}, R^{34}, R^{35}, R^{36} and R^{37} is a substituent group other than hydrogen atom; and

M^3 denotes a transition metal of group 4 of the periodic table.

5. (Original): The transition metal compound as claimed in Claim 4, wherein R^{29}, R^{30}, R^{31}; or R^{32}, R^{33}, R^{34}, or R^{35}, R^{36}, R^{37} are bonded to adjacent carbon atoms at 1-position, 2-position and 3-position of the respective cyclopentadienyl group.

6. (Original): The transition metal compound as claimed in Claim 5, wherein the three substituted cyclepentadienyl groups of $(C_5H_2R^{29}R^{30}R^{31})$, $(C_5H_2R^{32}R^{33}R^{34})$ and $(C_5H_2R^{35}R^{36}R^{37})$ are the same in structure.

7. (Original): The transition metal compound represented by the following general formula (4) as claimed in Claim 1:

$(C_5H_3R^{38}R^{39})(C_5H_3R^{40}R^{41})(C_5H_3R^{42}R^{43})M^4H$ ---Formula (4)

wherein $(C_5H_3R^{38}R^{39})$, $(C_5H_3R^{40}R^{41})$ and $(C_5H_3R^{42}R^{43})$ denote cyclopentadienyl groups or substituted cyclopentadienyl groups, respectively:

R^{38}, R^{39}, R^{40}, R^{41}, R^{42} and R^{43} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups each having a substituent of hydrocarbon having 1 to 30 atoms, which are the same or different from one another;

among them, R^{38}, R^{39}, or R^{40}, R^{41}, or R^{42}, R^{43} can be bonded to one another forming a cyclic hydrocarbon group (including polycyclic structure);

provided that at least one of R^{38}, R^{39}, R^{40}, R^{41}, R^{42} and R^{43} is a substituent group other than hydrogen atom; and M^4 denotes a transition metal of group 4 of the periodic table.

8. (Original): The transition metal compound as claimed in Claim 7, wherein the three substituted cyclepentadienyl groups of $(C_5H_3R^{38}R^{39})$, $(C_5H_3R^{40}R^{41})$ and $(C_5H_3R^{42}R^{43})$ are the same in structures.

9. (Original): The transition metal compound represented by the following general formula (5) as claimed in Claim 1:

$(C_9R^{44}R^{45}R^{46}R^{47}R^{48}R^{49}R^{50})(C_9R^{51}R^{52}R^{53}R^{54}R^{55}R^{56}R^{57})$-

$(C_9R^{58}R^{59}R^{60}R^{61}R^{62}R^{62}R^{63}R^{64})M^5H$ ---Formula (5),

wherein $(C_9R^{44}R^{45}R^{46}R^{47}R^{48}R^{49}R^{50})$, $(C_9R^{51}R^{52}R^{53}R^{54}R^{55}R^{56}R^{57})$ and $(C_9R^{58}R^{59}R^{60}R^{61}R^{62}R^{62}R^{63}R^{64})$ denote indenyl groups or substituted indenyl groups, respectively;

R^{44} to R^{64} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups each having a subsituent of hydrocarbon having 1 to 30 carbon atoms, which are the same or different from one another,

among them R^{44} to R^{50} or R^{51} to R^{57} or R^{58} to R^{64} can be bonded to one another forming a cyclic hydrocarbon group (including polycyclic structure);

provided that at least one of R^{38}, R^{39}, R^{40}, R^{41}, R^{42} and R^{43} is a substituent group other than hydrogen atom; and

M^5 denotes a transition metal of group 4 of the period table.

10. (Original): The transition metal compound represented by the following general formula (6) as claimed in Claim 1:

$(C_9H_3R^{65}R^{66}R^{67}R^{68})(C_9H_3R^{69}R^{70}R^{71}R^{72})(C_9H_3R^{73}R^{74}R^{75}R^{76})M^6H$ ---Formula (6),

wherein $(C_9H_3R^{65}R^{66}R^{67}R^{68})$, $(C_9H_3R^{69}R^{70}R^{71}R^{72})$ and $(C_9H_3R^{73}R^{74}R^{75}R^{76})$ denote indenyl groups or substituted indenyl groups, respectively;

R^{65} to R^{76} are any one of hydrogen atom, hydrocarbon groups each having 1 to 30 carbon atoms or organosilicon groups each having a substituent of hydrocarbon having 1 to 30 carbon atoms, which are the same or different from one another;

among them, R^{65} to R^{68}, R^{69} to R^{72} and R^{73} to R^{76} can be bonded to carbon atoms of 4-position, 5-position, 6-position and 7-position, respectively, of indenyl groups (in the part of six-membered ring) and they can be bonded to one another forming cyclic hydrocarbon groups (including polycyclic structure);

M^6 denotes a transition metal of group 4 of the periodic table.

11. (Original): The transition metal compound as claimed in Claim 10, wherein the three substituted indenyl groups of $(C_9H_3R^{65}R^{66}R^{67}R^{68})$, $(C_9H_3R^{69}R^{70}R^{71}R^{72})$ and $(C_9H_3R^{73}R^{74}R^{75}R^{76})$ are the same in structure.

12. (Currently Amended): The transition metal compound as claimed in ~~any one of~~ Claim 1 ~~to Claim 10~~, wherein the transition metal of group 4 of the period table is Zr.

13. (Currently Amended): A catalyst for olefin polymerization, which comprises ~~any one of~~ the transition metal compounds as claimed in ~~any one of~~ Claim 1 ~~to 11~~, an organoaluminum oxy compound and/or a compound which can form ion pairs with the transition metal compound.

14. (Original): The catalyst for olefin polymerization as claimed in Claim 13, wherein the organoaluminum oxy compound is methyl aluminoxane.

15. (Currently Amended): A solid catalyst for olefin polymerization, wherein the catalyst as claimed in Claim 13 ~~or Claim 14~~ is supported on a carrier.

16. (Currently Amended): A solid catalyst for olefin polymerization, wherein ~~any one of~~ the transition metal compounds as claimed in Claim 1 ~~to 12~~ is supported on layered silicate.

17. (Currently Amended): A method for producing polyolefin, wherein olefin is polymerized under the existence of ~~any one of~~ the ~~catalysts~~ catalyst as claimed in ~~Claims~~ Claim 13 ~~to 16~~.

18. (Original): The method for producing polyolefin as claimed in Claim 17, wherein the olefin polymerization is homopolymerization of ethylene or copolymerization of ethylene and α-olefin.